WHAT IS CLAIMED IS:

1. A method of discriminating matter utilizing dielectrophoresis combined with magnetophoresis, comprising:

injecting a sample having one or more constituents into an inlet port of a chamber;

initiating a carrier medium flow at the inlet port to establish a flow within the chamber;

generating a dielectrophoretic force on the constituents;

generating a magnetic force on the constituents;

balancing the dielectrophoretic force and magnetic forces to position the constituents within the chamber; and

collecting the constituents at one or more outlet ports of the chamber according to the dielectric and magnetic characteristics of the constituents.

2. The method of claim 1, wherein the sample comprises one or more analytes mixed with one or more labels having distinguishable magnetic and dielectric properties.

3. The method of claim 2, wherein a first label has first dielectric and magnetic properties and has a binding affinity for a first analyte and a second label has second dielectric and magnetic properties and has a binding affinity for a second analyte.

4. The method of claim 1, wherein the carrier medium flow causes the constituents to travel at velocities dependent upon their positions within the chamber.

5. The method of claim 4, wherein collecting comprises collecting different constituents emerging at different times from the one or more outlet ports according to their dielectric and magnetic characteristics.

6. The method of claim 1, wherein collecting comprises collecting different constituents emerging at different positions from the one or more outlet ports according to their dielectric and magnetic characteristics.

7. A method for batch-mode discrimination of matter utilizing dielectrophoresis combined with magnetophoresis, comprising:

injecting an aliquot of a sample having one or more constituents into an inlet port of a chamber;

initiating a carrier medium flow at the inlet port to establish a flow within the chamber, wherein the carrier medium flow causes the constituents to travel at velocities dependent upon their positions within the chamber;

generating a dielectrophoretic force on the constituents;

generating a magnetic force on the constituents;

balancing the dielectrophoretic force and magnetic forces to position the constituents within the chamber; and

collecting the constituents according to time-of-exit from an outlet port of the chamber.

8. The method of claim 7, wherein the sample comprises one or more analytes mixed with one or more labels having distinguishable magnetic and dielectric properties.

9. The method of claim 8, wherein a first label has first dielectric and magnetic properties and has a binding affinity for a first analyte, and a second label has second dielectric and magnetic properties and has a binding affinity for a second analyte.

10. A method for continuous-mode discrimination of matter utilizing dielectrophoresis combined with magnetophoresis, comprising:

continuously injecting a sample having one or more constituents into an inlet port of a chamber;

initiating a carrier medium flow at the inlet port to establish a flow within the chamber;

generating a dielectrophoretic force on the constituents;

generating a magnetic force on the constituents;

balancing the dielectrophoretic force and magnetic forces to position the constituents within the chamber; and

collecting the constituents from a plurality of outlet ports of the chamber according to the positions of the constituents.

11. The method of claim 10, wherein the sample comprises one or more analytes mixed with one or more labels having distinguishable magnetic and dielectric properties.

12. The method of claim 11, wherein a first label has first dielectric and magnetic properties and has a binding affinity for a first analyte, and a second label has second dielectric and magnetic properties and has a binding affinity for a second analyte.

13. A method of discriminating matter utilizing dielectrophoresis combined with magnetophoresis, comprising:

providing a chamber comprising at least one inlet and one outlet port, an array of electrodes in operative relation with to the chamber and configured to generate a dielectrophoretic force, and one or more permanent magnets in operative relation with the chamber and configured to generate a magnetic force;

injecting matter into an inlet port of a chamber;

generating a magnetic force on the matter using the one or more permanent magnets to discriminate and collect matter upon the magnets;

generating a dielectrophoretic force using the electrodes to repel the collected matter from the magnets; and

collecting the matter at one or more outlet ports of the chamber.

14. A method of discriminating matter utilizing dielectrophoresis and magnetophoresis, comprising:

preparing a sample containing at least one analyte and a plurality of labels, the plurality of labels having preselected dielectrophoretic and magnetic properties, at least some of the plurality of labels combining with the at least one analyte to create analyte-label complexes;

injecting the sample into an inlet port of a chamber, the chamber comprising a separation channel;

providing an electrical signal to at least one electrode element adapted to the chamber at different phases to create an electric field in the chamber to cause a dielectrophoretic force on the sample;

providing a magnetic signal to at least one magnetic element adapted to the chamber to create a magnetic field in the chamber to cause a magnetophoretic force on the sample;

initiating a carrier medium flow at the inlet port to establish a hydrodynamic flow profile within the separation channel, the carrier medium causing the at least one analyte and the analyte-label complexes to travel at velocities dependent upon their positions within the separation channel;

collecting the analyte-label complexes at an outlet port of the chamber, wherein the analyte-label complexes having similar magnetic and dielectric properties arrive at the outlet port in a single elution peak.

15. A method of discriminating target analytes utilizing dielectrophoresis and magnetophoresis, comprising:

preparing a sample containing at least one analyte and a plurality of labels, the plurality of labels having preselected dielectrophoretic and magnetic properties, at least some of the plurality of labels combining with the at least one analyte to create analyte-label complexes;

providing an electrical signal to at least one electrode element adapted to a chamber comprising a separation channel at different phases to create an

electric field in the chamber to cause a dielectrophoretic force on the sample;

providing a magnetic signal to at least one magnetic element adapted to the chamber to create a magnetic field in the chamber to cause a magnetophoretic force on the sample;

continuously injecting the sample into an inlet port of the chamber;

collecting the analyte-label complexes at a plurality of outlet ports of the chamber, wherein the analyte-label complexes having similar magnetic and dielectric properties arrive at the same one of the plurality of outlet ports.

16. An apparatus for discrimination of a sample utilizing dielectrophoresis, magnetophoresis, and field flow fractionation, comprising:

a chamber having at least one inlet and one outlet port;

an array of electrodes in operative relation with the chamber and configured to generate a dielectrophoretic force upon constituents of sample within the chamber;

an array of magnetrodes in operative relation with the chamber and configured to generate a magnetic force upon constituents of the sample within the chamber; and

wherein the electrodes and magnetrodes are configured to generate forces that balance one another to displace constituents within the sample to positions within the chamber characteristic of their magnetic and dielectric properties.

17. The apparatus of claim 16, wherein the array of magnetrodes comprises one or more permanent magnets.

18. The apparatus of claim 16, wherein the outlet port comprises multiple ports configured to collect bands of fluid that travel through the chamber at defined positions.